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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No.	Applicant(s)	
	10/526,278	BLOCK ET AL.	
	Examiner	Art Unit	
	Scott Bauer	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08/03/2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 22 & 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller (US 3,968,411) in view of Yrjölä et al. (US 5,521,561).

With regard to claim 22, Mueller, in Figure 1, discloses circuitry comprising: a terminal (12) for use with a high-frequency signal; at least two signal lines (to devices 14 & 16); a switching unit (18) for connecting the terminal to a signal line; and a primary protection device (22) for protecting against electrostatic discharges, the primary protection device being between the terminal and the switching unit, the primary protection device comprising a first element that diverts voltages having a pulse height greater than 200V to a reference potential (column 3 lines 7-14). Mueller further teaches that the primary protection device can have any breakdown voltage as is proper for the circuit. (column 3 lines 7-14)

Mueller does not teach that the circuitry is used in a mobile telephone or that the primary protection device diverts all voltages having a pulse height greater than a 200V switching voltage to a reference potential.

Yrjölä et al, in figure 10, teaches an antenna connected to a separate transmitter and receiver through a switch wherein the circuit is part of a mobile phone (column 1 lines 1-12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Mueller with Yrjölä et al, by using the protection circuit of Mueller in a mobile phone, for the purpose of shunting voltage surges applied to mobile phones thus preventing damage and lowering the amount of maintenance of the phone.

Further, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham* 2 USPQ2d 1647 (1987).

Although Mueller does not specifically state that the primary protection device diverts all voltages over 200V, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select a proper breakdown voltage of the primary protection device to compensate for the sensitivity of an individual circuit, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

With regard to claim 41, Mueller in view of Yrjölä teaches the circuitry of claim 22.

Yrjölä et al., teaches an arrangement for separating transmission and reception wherein a gallium arsenide switch is used to connect a transmitter and a receiver to a single antenna.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Mueller with Yrjölä et al, by incorporating the switch of Yrjölä et al into the circuitry of Mueller, for the purpose of providing a switch that has low power dissipation and a low parasitic capacitance.

With regard to claims 42 & 43, Mueller in view of Yrjölä discloses the circuitry of claim 22, comprising an antenna and wherein the signal lines comprise transmitting and receive paths.

Yrjölä et al, in figure 10, teaches an antenna connected to a separate transmitter and receiver through a switch wherein the circuit is part of a mobile phone (column 1 lines 1-12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Mueller with Yrjölä et al, by using the protection circuit of Mueller in a mobile phone, for the purpose of shunting voltage surges applied to mobile phones thus preventing damage and lowering the amount of maintenance of the phone.

Further, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham* 2 USPQ2d 1647 (1987).

2. Claims 23, 24, 26-29 & 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller in view of Yrjölä and further in view of Siemens AG (DE 3626800).

With regard to claims 23 & 24, Mueller in view of Yrjölä teaches the circuitry of claim 22.

Mueller in view of Yrjölä does not teach that the first element has an insertion attenuation that is less than 0.3 dB, or that the first element has a capacitance that is less than 1 pF.

Siemens AG, in Figure 1, teaches a surge protection device used in an HF system to protect a device against over voltage surges. Siemens AG further discloses that the first element has an insertion attenuation that is less than .1 dB, which is less than .3 dB and that the first element has a capacitance that is less than 1 pF (column 3 lines 31-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Mueller with Siemens AG, by incorporating the circuit protection of Siemens AG into the device of Mueller, for the

purpose of lowering the capacitance of the protection circuit thus allowing for an increased sensitivity of the receiver and preventing attenuation of the received signal.

With regard to Claim 26, Mueller in view of Yrjölä and Siemens AG discloses the circuitry of Claim 22. Siemens further discloses that the primary protection device comprises a circuit path (3) that connects the terminal and the switching unit; and wherein the first element (6) connects the circuit path to the reference potential.

With regard to Claim 27, Mueller in view of Yrjölä and Siemens AG discloses the circuitry of Claim 22. Siemens AG further discloses a second element (4) that is in parallel with the first element, the second element for limiting a current load of the first element.

With regard to Claim 28, Mueller in view of Yrjölä and Siemens discloses the circuitry of Claim 27. Siemens AG further discloses a capacitor (5) on a circuit path between the first element (6) and the second element (4).

With regard to Claims 29 & 31, Mueller in view of Yrjölä and Siemens discloses the circuitry of Claim 27. Siemens further discloses that the second element comprises is a discharger having a capacitance of less than 1 pF (column 3 lines 31-40).

3. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller in view of Yrjölä and Siemens AG as applied to claim 22 above, and further in view of Hitachi LTD (JP 2-162744).

With regard to Claim 25, Mueller in view of Yrjölä and Siemens AG teaches the circuitry of Claim 22. Siemens AG further discloses that the first element comprises a double diode (6).

Mueller in view of Yrjölä and Siemens does not teach the first element comprises a gallium arsenide double diode.

Hitachi Ltd, in Figure 7, teaches a double diode constructed of gallium arsenide used for over-voltage protection.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Mueller in view of Siemens AG with Hitachi Ltd, by constructing the double diodes taught by Siemens AG with gallium arsenide, for the purpose of providing greater protection to the switching unit by increasing the switching speed of the protection circuit.

4. Claims 27 & 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller in view of Yrjölä and further in view of Koss (US 5,122,921).

With regard to claim 27, Mueller in view of Yrjölä teaches the circuitry of claim 22.

Mueller in view of Yrjölä does not teach a second element that is parallel with the first element, the second element for limiting a current load of the first element.

Koss, in Figure 2, teaches a device to protect against ESD in an RF circuit comprising a second element (30) that is in parallel with a first element (38), the second element for limiting a current load of the first element (column 5 line 33 – column 6 line 14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Mueller in view of Yrjölä with Koss, by incorporating the second element of Koss into the device Mueller in view of Yrjölä, for the purpose of shunting transients that are too fast to trigger the spark gap of Mueller (Koss column 5 line 64-column 6 line 14).

With regard to claim 32, Mueller in view of Yrjölä and Koss discloses the device of claim 27. Koss further discloses that the second element comprises an inductive element having an inductance that is greater than 18 nH (column 4 lines 45-49).

5. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller in view of Yrjölä and Siemens AG as applied to claim 22 above, and further in view of Shrier (US 4,977,357).

With regard to Claim 30, Mueller in view of Yrjölä and Siemens AG teaches the circuitry of claim 22. Siemens AG further teaches that the second element (4) comprises a gas discharger.

Mueller in view of Yrjölä and Siemens AG does not teach that the second element comprises a polymer suppressor.

Shrier, teaches a protection element comprising a polymer suppressor.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Mueller in view of Siemens AG with Shrier, by incorporating the device of Shrier into the device of Mueller in view of Siemens AG, for the purpose of providing a protection device that can respond to repetitive electrical transients with nanosecond rise times and have low electrical capacitance (column 1 lines 12-18).

6. Claims 33, 35 & 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller in view of Yrjölä and Siemens AG as applied to claim 22 above, and further in view of Kurchuk et al. (US 6272327).

With regard to Claim 33, Mueller in view of Yrjölä and Siemens AG teaches the circuitry of claim 22.

Mueller in view of Yrjölä and Siemens AG does not teaches that circuit paths that provide control signals to the switching unit, each of the circuit paths comprising a secondary protection device against electrostatic discharges.

Kurchuk et al., in Figure 2, teaches a high power wireless telephone with over-voltage protection, comprising circuit paths (36 & 38) that provide control signals to the switching unit (24), each of the circuit paths comprising a secondary protection device

(44 & 46) against electrostatic discharges (column 3 lines 66 & 67 & column 4 lines 1-4).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Mueller in view of Siemens AG with Kurchuk et al., by Replacing the diplexer (3) taught by Mueller, with the switching unit taught by Kurchuk, for the purpose of providing a mobile phone with a switching unit that prevents receiver overloading without degrading the receiver sensitivity (Kurchuk et al. Column 2 lines 31-35).

With regard to Claim 35, Mueller in view of Yrjölä and Siemens AG and further in view of Kurchuk et al. discloses the circuitry of Claim 22. Kurchuk further discloses that the switching units comprises field effect transistors (Q1 & Q2), a contact break distance of each of the field effect transistors connecting the terminal (30) to the signal line (32 & 34), and wherein the circuitry further comprises: circuit paths that connect to gates of the field effect transistors, the circuit paths (40 & 42) for providing control signals to the gates, each of the circuit paths comprising a secondary protection device (44 & 46) for protecting against electrostatic discharges.

With regard to Claim 39, Mueller in view of Yrjölä and Siemens AG and further in view of Kurchuk et al. discloses the circuitry of Claim 35. Kurchuk further discloses that at least one secondary protection device (44) is connected to the reference potential.

7. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller in view of Yrjölä and Siemens AG as applied to claim 22 above, and further in view of Toshiba (JP 02000134945).

With regard to Claim 34, Mueller in view of Yrjölä and Siemens AG teaches the circuitry of Claim 22.

Mueller in view of Yrjölä and Siemens AG does not teach that the circuitry further comprises a circuit path for supplying for an operating voltage to the switching unit, the circuit path comprising a secondary protection device for protecting against electrostatic discharges.

Toshiba, in Figure 1, teaches a surge protection circuit for a switching unit (4) the circuit path supplies an operating voltage to the switching unit and the path comprises a protection device (6) for protecting against electrostatic discharges.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Mueller in view of Yrjölä Siemens AG with Toshiba, by protecting power terminal of the switching network taught by Mueller, with the protection device taught by Toshiba for the purpose of bypassing surge currents and voltages in the event of a line fault.

8. Claims 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller in view of Yrjölä and Siemens AG and further in view of Kurchuk as applied to claim 33 above, and further in view of Ikeda et al. (US 5276422).

With regard to Claims 36-38, Mueller in view of Yrjölä and Siemens AG and further in view of Kurchuk teaches the circuitry of claim 36. Kurchuk et al. further teaches that a low pass filter comprising a capacitor and a resistor can be used to absorb transient surge voltages.

Mueller in view of Yrjölä and Siemens AG and further in view of Kurchuk et al. does not teach that the voltage limiting element comprises a varistor or a zener diode having a switching voltage that is less than 100 V.

Ikeda teaches a device to protect a load. The device contains an element (14) that absorbs surge voltages. Ikeda further teaches that the element (14) can be a CR filter, a varistor or a zener diode (column 3 lines 66-68 & column 4 lines 1-6). Ikeda also discloses that as an example, the element can discharge at 300V (column 5 lines 1-3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Mueller in view of Siemens AG and further in view of Kurchuk et al. with Ikeda, by replacing the CR filter taught by Kurchuk et al. with the varistor or zener diode taught by Ikeda, for the purpose of providing a voltage limiting element with a fast reaction time that increases the switching speed of the switching unit.

Further, Mueller in view of Yrjölä and Siemens AG, Kurchuk and Ikeda discloses the claimed invention of claim 36 except that a discharge voltage of 300 V is specified, instead of 100 V. It would have been obvious to one of ordinary skill in the art at the time the invention was made to vary the discharge voltage based on the specific needs

of an individual circuit, since it has been held that discovering an optimal value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

9. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller in view of Yrjölä and Siemens AG as applied to claim 22 above, and further in view of Trikha et al. (US 6,072,993)

With regard to Claim 40, Mueller in view of Yrjölä and Siemens AG discloses the circuitry of claim 22.

Mueller in view of Yrjölä and Siemens AG does not teach that the switching unit comprises PIN diodes.

Trikha, in Figure 3A, teaches a diplexer for a cellular phone wherein the switching element comprises pin diodes (116', 118', 120', & 122').

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Mueller in view of Siemens AG with Trikha, by replacing the switching unit taught by Mueller with the diplexer taught by Trikha, for the purpose of using the device in high frequency applications.

10. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mueller in view of Yrjölä and further in view of Landy (2002/0080537).

With regard to claim 44, Mueller in view of Yrjölä teaches the circuitry of claim 22.

Mueller in view of Yrjölä does not teach that the switching unit and the primary protection device are integrated into a multi-layer ceramic substrate.

Landy, in Figure 1, teaches an ESD protected RX/TX switch circuit wherein the switch and the ESD protection are implemented as an RF integrated circuit which would necessarily comprise a multi-layer ceramic substrate.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Mueller with Landy, by incorporating a primary protection device and switch into one single unit on a multi-layer ceramic substrate, for the purpose of making the circuit more easy to mass produce thus decreasing the cost of the device.

Response to Arguments

In regard to claim 22, Applicants argue that Mueller does not teach diverting all voltages having a pulse height greater than a 200 V switching voltage because in the example given by Mueller, a voltage of at least 9000 V is needed to divert voltage. Applicants next point out that any proper breakdown voltage can be used for the spark gap of Mueller but argue that Mueller was designed to protect a short wave radio transceiver and does not provide any suggestion to use the protection device on a mobile phone to divert all voltages with a pulse height great than 200V.

Claim 22 has been amended and is now rejected by Mueller in view of Yrjölä. Yrjölä teaches a transceiver system similar in design to the transceiver of Mueller except that it is used in a mobile telephone. Further, It has been held that a

recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from the prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

Applicants next argue the combinability of Mueller and Yrjölä. Applicants argue that the protection system of Mueller would not work with the mobile phone of Yrjölä because of a difference of operating frequencies and size of the circuits. However, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

It is not the Office's position that the protection circuit of Mueller would be placed directly into the mobile phone of Yrjölä. Rather, Mueller teaches a need to protect a transmitter and receiver from large voltage pulses that are input from an antenna. Mueller teaches this protection is provided by diverting large voltages from the antenna to ground. Yrjölä teaches that this transceiver setup is found in a mobile phone. With the two references, one of ordinary skill in the art would recognize that the protection of Mueller could also be used to protect mobile phones with a motivation that was given above.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Bauer whose telephone number is 571-272-5986. The examiner can normally be reached on M-F 9am-6pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on 571-272-2084. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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30 OCT 2007



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